भारतीय मानक
Indian Standard

IS 18441 : 2023

लैम्बडासीहैलोथ्रिन + थियामेथोक्साम, ज़ेड सी — विशिष्टि

Lambdacyhalothrin + Thiamethoxam, ZC — Specification

ICS 65.100.10

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भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
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Pesticides Sectional Committee, FAD 01

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Pesticides Sectional Committee had been approved by the Food and Agriculture Divisional Council.

Lambdacyhalothrin + Thiamethoxam ZC is a mixed formulation of capsule suspension (CS) and suspension concentrate (SC) and used as insecticide in agriculture. Lambdacyhalothrin + thiamethoxam ZC formulation is generally manufactured to contain a mixture of 9.5 percent (*m*/*m*) of lambdacyhalothrin and 12.6 percent (*m/m*) of thiamethoxam.

In the preparation of this standard, due consideration has been given to the provisions of *Insecticides Act*, 1968 and the rules framed thereunder. However, this standard is subject to the restrictions imposed under the *Insecticides Act* and *Rules*, wherever applicable.

The composition of the Committee responsible for the formulation of this standard is given in Annex J.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 ‘Rules for rounding off numerical values (*second revision*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

LAMBDACYHALOTHRIN + THIAMETHOXAM ZC — SPECIFICATION

1 SCOPE

This standard prescribes the requirements and the methods of sampling and test for lambdacyhalothrin + thiamethoxam, ZC.

2 REFERENCES

The standards listed in Annex A contain provisions, which through reference in this text constitute provisions of this standard. At the time of publication, the edition indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of these standards.

3 REQUIREMENTS

3.1 Constituents

3.1.1 The material shall consist of a suspension of fine particles of lambdacyhalothrin and thiamethoxam, technical, in an aqueous phase together with suitable formulants.

3.1.2 Lambdacyhalothrin, technical conforming to IS 14509 and thiamethoxam, technical conforming to IS 15983 shall be employed in the formulation of the material.

3.2 Physical

3.2.1 *Description*

The material shall be homogenous suspension liquid free from any visible impurities. There may be some clear liquid on the top/and or sediments in the bottom.

NOTE — Before take sampling for analysis, homogenize commercially container by inverting several times.

3.2.2 *Pourability*

When determined by the method prescribed in Annex D, the rinsed residue shall not be more than 1 percent (*m*/*m*).

3.2.3 *Suspensibility*

When determined by the method prescribed in Annex E, the suspensibility of the material shall not be less than 80 percent (*m*/*m*).

3.2.4 *Persistent Foam*

When determined by the method prescribed in Annex F, the persistent foam shall not be more than 60 ml in 1 min.

3.2.5 *Wet Sieve Test*

Not less than 98 percent by mass of the material shall pass through a 45 micron IS sieve when determined by method described in Annex G.

3.2.6 *p*H *of Suspension*

When determined by the method prescribed in Annex H, the *p*H of 1 percent solution in standard hard water (342 ppm) shall be between 5.0 to 7.0.

3.3 Chemical

The material shall comply with the chemical requirements specified in **3.3.1** and **3.3.2**.

3.3.1 When determined by the method prescribed in the Annex B and Annex C, the observed lambdacyhalothrin and thiamethoxam content, percent (*m/m*) of any of the samples shall not differ from the declared nominal value by more than tolerance limits indicated below:

Sl No. (1)	*Nominal Value, Percent* (2)	*Tolerance Limits, Percent* (3)	
i)	Up to 9	+10 -5	of the nominal value
ii)	Above 9 and below 50	+ 5 - 5	
iii)	50 and above	+ 5 - 3	

3.3.2 The actual value of lambdacyhalothrin and thiamethoxam content in the formulation shall be calculated to the second decimal place and then rounded off to first decimal place before applying the tolerance given in **3.3.1**.

4 PACKING

The material shall be packed in high density polyethylene (HDPE) containers/bottles of capacities 100 ml, 250 ml, 500 ml and 1 litre. The

HDPE containers for packing of material shall conform to IS 9754. These shall be further packed in 5 ply corrugated boxes of 10 litre × 1 litre, 20 ml × 500 ml, 40 ml × 250 ml. The packing should also meet the general requirements given in IS 8190 (Part 2).

5 MARKING

5.1 The containers shall bear legibly and indelibly the following information and other additional information:

a) Name of the material;
b) Name and address of the manufacture;
c) Date of manufacture and date of expiry;
d) Batch No.;
e) Net quantity;
f) Nominal lambdacyhalothrin content, percent (*m*/*m*);
g) Nominal thiamethoxam content, percent (*m*/*m*);
h) A cautionary notice as worded in the *Insecticide Act*, 1968, and rules framed thereunder; and
j) Any other information required under the *Legal Metrology* (*Packaged Commodities*) *Rules*, 2011.

5.2 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

6 SAMPLING

Representative samples of the material shall be drawn according to IS 10627.

7 TESTS

7.1 Tests shall be carried out by the appropriate methods referred in **3.2.2** to **3.2.6, 3.3.1** and **3.3.2.**

7.2 Quality of Reagents

Unless specified otherwise, pure chemicals and reagent grade water (*see* IS 1070) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities, which affect the results of analysis.

ANNEX A

(*Clause* 2)

LIST OF REFERRED STANDARDS

IS No.	*Title*
IS 1070 : 2023	Reagent grade water — Specification (*fourth revision*)
IS 1448 (Part 20) : 2019	Methods of test for petroleum and its products: Part 20 — Determination of flash point — Abel close-cup method (*third revision*)
IS 2771 (Part 1) : 2022	Corrugated fibreboard boxes — Specification: Part 1 General requirements (*third revision*)
IS 6940 : 1982	Method of test for pesticides and their formulations (*first revision*)
IS 8190 (Part 2) : 1988	Requirement for packing of pesticides: Part 2 Liquid pesticides (*second revision*)
IS 9754 : 1981	Specification for high density polyethylene containers for packing of liquid pesticides (up to 1 litre capacity)
IS 10627 : 1983	Methods for sampling of pesticidal formulations
IS 12512 : 1989	HDPE containers — For liquid pesticides — Capacity over 1 and up to 5 litres — Specification
IS 14509 : 1997	Lambda-cyhalothrin, technical — Specification
IS 15983 : 2013	Thiamethoxam, technical — Specification

ANNEX B

(*Clause* 3.3.1)

DETERMINATION OF LAMBDACYHALOTHRIN CONTENT IN LAMBDACYAHALOTHRIN + THIAMETHOXAM ZC

B-1 GENERAL

B-1.1 Two methods, namely, high performance liquid chromatography method (**B-2**) and gas liquid chromatography method (**B-3**) may be used for determination of lambdacyhalothrin in lambdacyhalothrin + thiamethoxam ZC.

B-2 HIGH PERFORMANCE LIQUID CHROMATOGRAPHY METHOD

B-2.1 Principle

Lambdacyhalothrin content in the sample is determined by high performance liquid chromatography.

B-2.2 Apparatus

B-2.2.1 *High Performance Liquid Chromatography* — equipped with a constant flow pump, sample injector capable of injecting 20 µl aliquots and an ultraviolet detector coupled to chromatography software and printer is used for this determination.

Instrument	High performance liquid chromatography system equipped with binary system and UV detector
Column	Silica, 25 cm × 4.6 mm internal diameter, 5 µm particle size
Mobile Phase	Hexane + tetrahydrofuran (99.5 + 0.5)
Flow Rate	1.5 ml/min
Injection Volume	20 µl
Detector	Ultraviolet detector (235 nm)

B-2.2.2 *Analytical Balance*

B-2.2.3 *p*H *Meter*

B-2.2.4 *Microliter Syringe* — 25 µl capacity

B-2.2.5 *Ultrasonic Bath*

B-2.2.6 *Standard Glassware*

B-2.3 Reagents

B-2.3.1 *Isopropyl Alcohol* — HPLC grade

B-2.3.2 *Tetrahydrofuran* — AR grade

B-2.3.3 *n-Hexane* — HPLC grade

B-2.3.4 *Lambdacyhalothrin Reference Standard* — of known purity

B-2.4 Preparation of Diluent Solution for Sample — Isopropyl alcohol : Water (80 : 20)

B-2.5 Procedure

B-2.5.1 *Preparation of the Standard Solution*

Weigh approx 50 mg of reference standard into 50 ml standard volumetric flask and 25 ml of hexane in it, sonicate it for 2 min and make up to the mark with hexane and homogenize.

B-2.5.2 *Preparation of Sample Solution*

Weigh sample equivalent to standard lambdacyhalothrin and add about 10 ml of diluent solution and sonicate it for 2 min and make up to the mark with hexane and homogenize.

B-2.6 Calculation

Lambdacyhalothrin content, percent by mass =

$$\frac{A_{\mathrm{SAM}} \times W_{\mathrm{STD}}}{A_{\mathrm{STD}} \times W_{\mathrm{SAM}}} \times \mathrm{P}$$

where

A_{SAM} = peak area of lambdacyhalothrin in sample solution;
W_{STD} = mass, in mg, of standard lambdacyhalothrin;
A_{STD} = peak area of lambdacyhalothrin in standard solution;
W_{SAM} = mass, in mg, of lambdacyhalothrin taken for test; and
P = percentage purity of standard.

B-3 GAS LIQUID CHROMATOGRAPHY METHOD

B-3.1 Principle

Lambdacyhalothrin content in the sample is determined by gas liquid chromatography.

B-3.2 Apparatus

B-3.2.1 A gas liquid chromatograph equipped with flame ionisation detector and a printer-plotter integrator is used. The suggested operative parameters are as follows, but can be changed if necessary, provided standardization is done:

Instrument	Gas liquid chromatography
Column	SS, 50 cm length, 2 mm internal diameter, 3 percent OV–101 on gas chrome Q or chromosorb WHP (80 to 100 mesh)
Temp conditions	Oven : 210 ºC Injector : 240 ºC Detector : 270 ºC
Gases flow rate	Carrier gas (N_2) : 30 ml/min Fuel gas (H_2) : 30 ml/min Air : 300 ml/min
Injection volume	1 µl
Detector	Flame ionization detector (FID)

B-3.2.2 *Analytical Balance*

B-3.2.3 *Microliter Syringe* — 10 µl capacity

B-3.2.4 *Ultrasonic Bath*

B-3.2.5 *Standard Glassware*

B-3.3 Reagents

B-3.3.1 *Lambdacyhalothrin Standard* — of known purity

B-3.3.2 *Acetone* — AR grade

B-3.3.3 *Dicotyl Phthalate* — AR grade (internal standard)

B-3.4 Procedure

B-3.4.1 *Preparation of Internal Standard Solution*

Weigh (to the nearest of 0.1 mg) 225 mg of internal standard in a 100 ml volumetric flask and make up to volume using acetone. Finally mix the solution properly.

B-3.4.2 *Preparation of the Standard Solution*

Weigh approx 0.1 g of lambdacyhalothrin reference standard into a 50 ml volumetric flask add 10 ml of internal standard solution and make up to volume using acetone. Finally mix the solution properly.

B-3.4.3 *Preparation of Sample Solution*

Weigh a sample equivalent to reference standard into a 50 ml volumetric flask. Add 10 ml of internal standard solution and make up to volume using acetone. Finally mix the solution properly

B-3.5 Calculation

Response factor (R_f) =

$$\frac{\text{Area of active peak}}{\text{Area of internal standard peak}}$$

Lambdacyhalothrin content, percent by mass =

$$\frac{\text{mass of sample} \times R_f \text{ of reference standard}}{\text{mass of reference standard} \times R_f \text{ of sample}} \times P$$

ANNEX C

(*Clause* 3.3.1)

DETERMINATION OF THIAMETHOXAM CONTENT IN LAMBDACYHALOTHRIN + THIAMETHOXAM ZC

C-1 PRINCIPLE

Thiamethoxam content in the sample is determined by high performance liquid chromatography.

C-2 APPARATUS

C-2.1 High performance liquid chromatograph equipped with a constant flow pump, sample injector capable of injecting 20 µl aliquots and an ultraviolet detector coupled to chromatography software and printer is used for this determination.

Instrument	High performance liquid chromatography system equipped with binary system and UV detector
Column	ODS C18 (25cm × 4.6 mm internal diameter, 5 nm)
Mobile phase	Acetonitrile : Water (40 : 60)
Flow rate	1.0 ml/min
Injection volume	20 µl
Detector	Ultraviolet detector (256 nm)

C-2.2 Analytical Balance

C-2.3 *p*H Meter

C-2.4 Microliter Syringe — 25 µl capacity

C-2.5 Ultrasonic Bath

C-2.6 Standard Glassware

C-3 REAGENTS

C-3.1 Thiamethoxam Reference Standard — of known purity

C-3.2 Acetonitrile — HPLC grade

C-3.3 Water — HPLC grade

C-4 PROCEDURE

C-4.1 Preparation of the Standard Solution

Weigh about 50 mg of thiamethoxam standard into volumetric flask (50 ml) and add 25 ml acetonitrile into flask and place the flask in an ultrasonic bath for approx 2 min, allow it to attain room temperature and make up the volume up to the mark with acetonitrile and mix thoroughly.

Pipette out 5.0 ml of solution into a 50 ml volumetric flask and makeup to the mark with acetonitrile and homogenize.

C-4.2 Preparation of Sample Solution

Weigh sample equivalent to thiamethoxam standard into volumetric flask (50 ml) and add 5 ml of water, place the flask in an ultrasonic bath for approx. 2 min, allow it to attain room temperature and make up the volume up to the mark with acetonitrile and mix thoroughly.

Pipette out 5.0 ml of solution into a 50 ml volumetric flask and makeup to the mark with acetonitrile and homogenize.

C-5 CALCULATION

Thiamethoxam content, percent by mass =

$$\frac{M_1 \times A_2}{A_1 \times M_2} \times \text{P}$$

where

M_1 = mass, in g, of thiamethoxam standard;
A_2 = area of thiamethoxam peak in the sample;
A_1 = area of thiamethoxam peak in the standard;
M_2 = mass, in g, of thiamethoxam sample; and
P = percentage purity of standard.

ANNEX D

(*Clause* 3.2.2)

DETERMINATION OF POURABILITY IN LAMBDACYHALOTHRIN + THIAMETHOXAM, ZC

D-1 OUTLINE OF THE METHOD

The suspension concentrate is allowed to stand for a definite time and the amount remaining in the container after a standardized pouring procedure is determined. The container is rinsed and the amount then remaining is determined.

D-1.1 Apparatus/Equipment

D-1.1.1 A 500 ml stoppered measuring cylinder as per following requirements:

Volume equivalent to 1 subdivision of the scale : 5 ml
Capacity corresponding to lowest graduation mark : 50 ml
Capacity corresponding to highest graduation mark : 500 ml
Length of scale : 250 mm
Overall height : 39 cm
Diameter of base : 10 cm
Stopper : B 34

NOTE — High density polyethylene bottles, 1 000 ml volume and Kilner jars, 700 ml volume, can be used but this must be recorded with the result.

D-1.2 Procedure

Weigh the empty container and stopper (W_0) and add enough of the test item taken from a recently mixed bulk sample to leave approximately 20 percent of the volume of the container as ullage. Replace the stopper and reweigh the container (W_1). Allow the container to stand undisturbed for 24 h and then pour out the test item (*see* Note 1) for 60 s at an angle of 45° and then finally invert the container for 60 s (*see* Note 2). Re-weigh the container and stopper (W_2). Add distilled water at 20 °C (a volume of 80 percent of that of the container) and replace the stopper. Invert the container 10 times (*see* Note 3) and empty the container as before and re-weigh the container and stopper (W_3). Calculate the residue (R) and the rinsed residue (R_1).

D-1.3 Calculation

Residue (R), percent by mass = $\frac{W_2 - W_0}{W_1 - W_0} \times 100$

Rinsed residue (R_1), percent by mass =

$$\frac{W_3 - W_0}{W_1 - W_0} \times 100$$

where

W_0 = weight, in g, of the empty container;
W_1 = weight, in g, of the container with the sample;
W_2 = weight, in g, of the container after the pouring out of the suspension concentrate; and
W_3 = weight, in g, of the container after removal of distilled water.

NOTES

1 The length of the standing period and the temperature should be agreed previously.

2 A square sided container should be held so that a flat side is underneath.

3 The term invert the container means that the container's vertical axis is turned through 180 °C and then brought back to its original position, the whole operation taking about 2 s.

ANNEX E

(*Clause* 3.2.3)

DETERMINATION OF SUSPENSIBILITY IN LAMBDACYHALOTRHIN + THIAMETHOXAM ZC

E-1 REAGENTS

Standard hard water

E-2 APPARATUS

Beaker & Glass rod

E-3 PROCEDURE (FOR LAMBDACYHALO--THRIN)

Carry out the whole procedure in duplicate. Homogenize the sample by gently stirring (*see* Note 1). The mass of sample to be taken is that required to make 250 ml of diluted suspension, with the concentration recommended on the label. If a range of concentrations is recommended, the highest and lowest should be used (*see* Note 2). The standard hard water, measuring cylinder and sample to be used in the determination should be equilibrated to the required temperature.

Place 100 ml of equilibrated standard water in a 250 ml measuring cylinder. Weigh the required amount of sample into a 50 ml beaker and transfer quantitatively to the cylinder with more standard water, finally making up to 250 ml. Stopper the cylinder and invert 30 times (*see* Note 3). Place the cylinder in an upright position, free from vibration, and allow it to stand undisturbed for 30 min.

At the end of the time, quickly insert the glass tube into the cylinder and by means of a vacuum pump and suitable reservoir withdraw nine-tenths (225 ml) of the suspension. Carry out the operation in 10 s to 5 s by maintaining the tip of the glass tube just below the falling level of the suspension, care being taken to minimize any disturbance of the suspension (*see* Note 4).

Transfer the 25 ± 1 ml of dilute suspension remaining in the cylinder to an evaporation dish and evaporate the water to dryness over a water bath. Record the weight of the residue. Find out the quantity (Q) of active ingredient in the residue by multiplying weight of residue with the assayed percent active ingredient content in the formulation (see Annex B) and dividing by 100. Calculate the suspensibility as given in **E-4**.

NOTES

1 A crust of dry material sometimes forms inside the neck of suspension concentrate containers. Care must be taken to ensure that particles do not break away from this and contaminate the sample used for the determination.

2 It may be helpful to weigh the beaker plus formulation before and after the addition to the water to make a check on the amount of sample added to the water.

3 To invert the cylinder, hold it with one hand at each end, insulated with a cloth, and rotate it through 180 °C and back again, through an imaginary fixed point midway between the hands. Ensure no bouncing occurs. Each inversion should take 2 s.

4 It may be helpful to fit a rubber bung, larger than the cylinder mouth, as an adjustable stop so that the final level of suspension left in the cylinder is repeatable. The position of the bung can be determined by a preliminary calibration.

E-4 CALCULATION (FOR LAMBDACYHAL--OTHRIN)

Suspensiblity, percent by mass = $\frac{111\ (c - Q)}{c}$

where

$c = \frac{a \times W}{100}$ = mass, in g, in the whole cylinder;

Q = mass, in, g of active ingredient in 25 ml sample at the bottom;

a = percent by mass of active ingredient in the formulation; and

W = mass, in g, of formulation actually added to the cylinder.

E-5 PROCEDURE (FOR THIAMETHOXAM)

Carry out the whole procedure in duplicate. Homogenize the sample by gently stirring (*see* Note 1). The mass of sample to be taken is that required to make 250 ml of diluted suspension, with the concentration recommended on the label. If a range of concentrations is recommended, the highest and lowest should be used (*see* Note 2). The standard hard water, measuring cylinder and sample to be used in the determination should be equilibrated to the required temperature.

Place 100 ml of equilibrated standard water in a 250 ml measuring cylinder. Weigh the required amount of sample into a 50 ml beaker and transfer quantitatively to the cylinder with more standard water, finally making up to 250 ml. Stopper the cylinder and invert 30 times (*see* Note 3). Place the cylinder in an upright position, free from vibration, and allow it to stand undisturbed for 30 min.

At the end of the time, quickly insert the glass tube into the cylinder and by means of a vacuum pump and suitable reservoir withdraw nine-tenths (225 ml) of the suspension. Carry out the operation in 10 s to 15 s by maintaining the tip of the glass tube just below the falling level of the suspension, care being taken to minimize any disturbance of the suspension (*see* Note 4).

Transfer the 25 ± 1 ml of dilute suspension remaining in the cylinder to an evaporation dish and evaporate the water to dryness over a water bath. Record the weight of the residue. Find out the quantity (Q) of active ingredient in the residue by multiplying weight of residue with the assayed percent active ingredient content in the formulation (see Annex C) and dividing by 100. Calculate the suspensibility as given in **E-6**.

NOTES

1 A crust of dry material sometimes forms inside the neck of suspension concentrate containers. Care must be taken to ensure that particles do not break away from this and contaminate the sample used for the determination.

2 It may be helpful to weigh the beaker plus formulation before and after the addition to the water to make a check on the amount of sample added to the water.

3 To invert the cylinder, hold it with one hand at each end, insulated with a cloth, and rotate it through 180°C and back again, through an imaginary fixed point midway between the hands. Ensure no bouncing occurs. Each inversion should take 2 s.

4 It may be helpful to fit a rubber bung, larger than the cylinder mouth, as an adjustable stop so that the final level of suspension left in the cylinder is repeatable. The position of the bung can be determined by a preliminary calibration.

E-6 CALCULATION (FOR THIAMETHOXAM)

$$\text{Suspensibility, percent by mass} = \frac{111\,(c - Q)}{c}$$

where

$c = \frac{a \times W}{100}$ = mass, in g, in the whole cylinder;

Q = mass, in, g of active ingredient in 25 ml sample at the bottom;

a = percent by mass of active ingredient in the formulation; and

W = Mass, in g, of formulation actually added to the cylinder.

ANNEX F

(*Clause* 3.2.4)

DETERMINATION OF PERSISTANT FOAM IN LAMBDACYHALOTHRIN + THIAMETHOXAM ZC

F-1 OUTLINE OF THE METHOD

The formulation is diluted in a measuring cylinder of standard dimensions which is inverted 30 times and, the amount of foam created and remaining after certain time is measured.

F-2 APPARATUS

F-2.1 Graduated Cylinder

Glass stoppered of 250 ml capacity, with 2 ml graduations. The distance between the 0 mark and the 250 ml mark should be 20 cm to 21.5 cm and between the 250 ml mark and the bottom of the stoppered, 6 cm to 8 cm (The cylinder should be clean and free from grease).

F-2.2 Stopwatch

F-3 REAGENT

Standard water

F-4 PROCEDURE

The mass of sample to be taken is that mass required to make 200 ml of a diluted formulation with a concentration recommended in the directions for use supplied with the product. When several concentrations are recommended, the maximum concentration shall be used.

Put about 180 ml of standard hard water into the 250 ml measuring cylinder standing on a top pan balance and weigh in the required amount of the sample. Fill to 200 ml with standard hard water and record the temperature (*see* Note 1). Stopper the cylinder and then invert it 30 times by hand through 180 degrees and back to its original position, the whole operation being completed in approximately 2 s. Place the stoppered cylinder upright on the bench and immediately start the stopwatch. Read the volume of foam produced and remaining after 12 min (*see* Note 2).

NOTES

1 The recommended temperature is 25 °C ± 5 °C.

2 A few bubbles round the periphery are not significant. Any volumes above the 250 ml mark should be marked on the outside and the volume of foam thus determined.

ANNEX G

(*Clause* 3.2.5)

DETERMINATION OF WET SIEVE TEST IN LAMBDACYHALOTHRIN + THIAMETHXAM ZC

G-1 PRINCIPLE

The method is suitable for the determination of the amount of the non-dispersible material in Lambdacyhalothrin + Thiamethoxam, ZC.

G-2 APPARATUS

G-2.1 Test Sieve — specified IS sieve [*see* IS 460 (Part 1)] prepared for the test by removing any film, grease or any other water repellant material and then by drying.

G-2.2 Rubber Hose — of 10 mm internal diameter

G-3 PROCEDURE

G-3.1 Wet Sieving

Transfer 10 g of the sample to the sieve, rinse with tap water. Wash the material on the sieve with an oscillating jet of tap water. Using a rubber hose of 10 mm internal diameter. delivering 4 litres to 5 litres of water per min. Continue the washing for 10 min, directing the water from the circumference of the sieve towards the center and keeping the end of the hose at a distance of between 2 cm to 5 cm from the surface of sieve. Transfer the residue to a pre weighed watch glass with a jet of distilled water from a wash bottle. Dry to constant weight and record the weight of the sample to the nearest 0.01 g.

G-4 CALCULATION

Material passing through the IS sieve, percent by mass =

$$100\,(1 - \frac{m}{M})$$

where

m = mass, in g, of the dry residue obtained; and
M = mass, in g, of the material taken for test.

ANNEX H

(*Clause* 3.2.6)

DETERMINATION OF *p*H TEST IN LAMBDACYHALOTHRIN + THIAMETHXAM ZC

H-1 PRINCIPLE

The *p*H is determined using a *p*H meter having a range 0 to 14 with a precision of 0.1 *p*H.

H-2 REAGENTS

H-2.1 Buffer Tablets — tablets of *p*H 4.0, 7.0 and 9.2

H-2.3 Standard Hard Water

H-3 APPARATUS

H-3.1 *p*H Meter — direct reading, with glass electrode and a calomel reference electrode or any other suitable electrode along with temperature compensation.

H-3.2 Balance (Analytical) — sensitive to 0.1 g

H-3.3 Standard Glassware

H-4 PROCEDURE

From the buffer tablets, prepare 4.0, 7.0 and 9.2 *p*H buffer solutions, following the prescribed instruction given with the tablets. Standardize the *p*H meter using the buffers as follows:

a) Immerse the electrodes of the *p*H meter in 7.0 *p*H buffer solution and adjust the meter to read 7.0 *p*H. Remove the buffer solution from the electrodes, wash these with water and wipe the electrodes free from water.

b) Replace with *p*H buffer solution 9.2 and adjust the meter to read 9.2 *p*H. Remove the buffer solution from the electrodes, wash these with water and wipe the electrodes free from water. Repeat the above procedure using 4.0 *p*H buffer solution.

c) Weigh accurately about 1.0 g of the sample and add 100 ml of standard hard water. Mix the sample thoroughly to get a uniform suspension in a beaker. Measure the *p*H of the suspension. Report result to nearest 0.1 *p*H.

ANNEX J

(*Foreword*)

COMMITTEE COMPOSITION

Pesticides Sectional Committee, FAD 01

Organization	*Representative(s)*
Directorate of Plant Protection Quarantine and Storage, Faridabad	Dr J. P. Singh **(*Chairperson*)**
All India Biotech Association, New Delhi	Shri Saurabh Singhal Shri Shah Ji Dhar (*Alternate*)
Central Insecticide Board and Registration Committee, Faridabad	Secretary Dr Vandana Seth (*Alternate*)
Central Insecticide Laboratory, Faridabad	Dr Archana Sinha Shri Subhash Chaudhary (*Alternate*)
Consumer Guidance Society of India, Mumbai	Shri Sitaram Dixit Dr M. S. Kamath (*Alternate*)
Crop Care Federation of India, New Delhi	Dr J. C. Majumdar
Crop Life India, New Delhi	Shri Asitava Sen Ms Nirupama Sharma (*Alternate*)
CSIR - Indian Institute of Toxicology Research, Lucknow	Director Dr Sheelendra P. Singh
FMC India Pvt Limited, Bengaluru	Shri Chirag Patel
Food Safety and Standards Authority of India, New Delhi	Advisor (Standards)
IDMA Laboratories Limited, Chandigarh	Dr Indra Rai
Indian Agricultural Research Institute, New Delhi	Director
Indian Institute of Packaging, Mumbai	Dr Tanweer Alam
Indian Pest Control Association, New Delhi	Shri Udayan Ghosh
Institute of Pesticide Formulation Technology, Gurugram	Dr M. Vairamani
Ministry of Agriculture, Department of Agriculture, Chennai	Joint Director of Agriculture (Res.) Deputy Director Lab (*Alternate*)
National Centre for Integrated Pest Management, New Delhi	Dr Sumitra Arora
National Institute of Plant Health Management, Hyderabad	Dr Mahesh Saini Ms T. Sridevi (*Alternate*)

Organization	*Representative(s)*
Pesticide Manufactures and Formulators Association of India (PMFAI), Mumbai	Dr Archana Srivastava
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